JPRS 68153

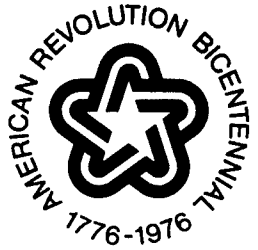
2 November 1976

EAST EUROPE

TRANSLATIONS ON EASTERN EUROPE

SCIENTIFIC AFFAIRS

No. 527



U. S. JOINT PUBLICATIONS RESEARCH SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22151. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

BIBLIOGRAPHIC DATA SHEET	1. Report No. JPRS68153	2.	3. Recipient's Accession No.
4. Title and Subtitle TRANSLATIONS ON EASTERN EUROPE - SCIENTIFIC AFFAIRS, No. 527			5. Report Date 2 November 1976 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201			10. Project/Task/Work Unit No. 11. Contract/Grant No.
12. Sponsoring Organization Name and Address As above			13. Type of Report & Period Covered 14.

15. Supplementary Notes

16. Abstracts

The serial report contains articles concerning the development of and progress in the various theoretical and applied scientific disciplines and technical fields; and the administration, structure, personnel, and research plans of leading East European scientific organizations and institutions, particularly the academies of sciences.

17. Key Words and Document Analysis. 17a. Descriptors

___ International Affairs
___ Albania
_x_ Bulgaria
___ Czechoslovakia
___ East Germany
_x_ Hungary
___ Poland
___ Romania
___ Yugoslavia

Scientific Societies
Research Management
Organizations
Research

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group 5B

18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22151	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 37
	20. Security Class (This Page UNCLASSIFIED	22. Price

JPRS 68153

2 November 1976

TRANSLATIONS ON EASTERN EUROPE

SCIENTIFIC AFFAIRS

No. 527

CONTENTS PAGE

CONTENTS (Continued)

AVAILABLE WATER RESOURCES EXAMINED

Sofia KHIDROTEKHNIKA I MELIORATSII in Bulgarian No 6, 1976 pp 12-16

[Article by Engineer Tsvetan Tsanev: "Water Resources and the Satisfaction of Water Requirements in the Bulgarian People's Republic"]

[Text] The Bulgarian People's Republic has limited water resources, adversely distributed throughout the year. For the country at large, they are as follows:

Table 1

Average Annual Precipitation	Average Annual Surface Flow	Surface Flow in 75% Drought-y Year	Surface Flow in 95% Very Droughty Yr
74,500-	18,801-	13,229-	8471-

Remark:

1. It is considered, on the basis of the latest development, that the size of the flow will be slightly higher. It will be entirely determined following the redrafting of the Unified Water Resource Plan of the Bulgarian People's Republic.

2. The figures are in million cubic meters and do not include the flow of border rivers such as the Danube, Erma, Dragovishtitsa, and others.

These data show the great decline in the size of the surface flow in a droughty year with a 75 percent supply, and a very droughty year, with a 95 percent supply. This is the natural result of the geographic location and weather characteristics of the country. In this connection, in accordance with the data of the United Nations European Economic

Commission, Bulgaria is in one of the last positions in Europe in terms of the size of its surface flow. Per capita surface flow in Albania, Yugoslavia, Greece, France, Italy, the FRG, Spain, and others, ranges from 2500 to 5900 cubic meters per resident, compared with 2255 cubic meters per resident in our country. Furthermore, our water consumption is over 100 percent higher than in those countries, as a result of the high water consumption for irrigation requirements. Water consumption in 1939 for irrigation, the population, and industrial water supplies in our country was 420 million cubic meters, compared with about 8 billion cubic meters in 1975, and with an overall absolute increase of 19 times and 13.6 times, on a population per capita water consumption basis. Furthermore, precipitations and the surface flow are quite uneven and very adverse throughout the year, for their minimal levels are in the July-September period when water requirements are highest as shown in Table 2.

Table 2. Distribution of Precipitations and Surface Flow Throughout the Year in Percentage of Annual Amount by Water Resource Area in the Country

1 Водостопански район	2 Период X-III	3 Период IV—VI	4 Период VII—IX
5 I — Северозападна България	65	30	5
6 II — Централна сев. България	49	42	9
7 III — Добруджа и Лудогорие	67	25	8
8 IV — Сев. притоци на Черно море	61	26	13
9 V — Югозападна България	49	45	6
10 VI — Поречието на р. Арда	70	25	5
11 VII — Централна Южна България	54	38	8
12 VIII — Бургаски реки	76	19	5

Key: 1. Water resource region. 2. October-March. 3. April-June. 4. July-September. 5. Northwestern Bulgaria. 6. Central northern Bulgarian. 7. Dobrudzha and Ludogorie. 8. Northern Black Sea tributaries. 9. Southwestern Bulgaria. 10. Arda River basin. 11. Central southern Bulgaria. 12. Burgas rivers.

Precipitations and the surface flow are also adversely distributed territorially. Water-scarce are the third area (Dobrudzha and Ludogorie), the fourth area (the area of the Kamchiya and Provadiyska river basins) and the eighth area (Burgas rivers). The highest surface flow is in areas five and seven. In the latter, however, water consumption is 2 to 3 times higher than in areas with average water consumption. Therefore, in the future its requirements cannot be met with its own water sources, and water will have to be transferred to it from other areas. Comparing the data of the surface flow on the territory of the country and water requirements within the next 25 years, the following can be established:

The surface water flow will not be able to meet water requirements for the population and industry at the irrigation of agricultural areas in which this is technically possible and economically justified. This leads to the following shortage of water in comparing the size of surface flow and water requirements in million cubic meters (Table 3).

Table 3.

Таблица 3

		1 При средна година	2 При суха година	3 При мн. суха година
4	Повърхнос тен отток	18801	13228,90	84712,0
5	Нужди от вода	19635	20443,50	20086,70
6	Недостиг	834	7214, 60	11615,50

Key: 1. Average year. 2. Droughty year. 3. Very droughty year. 4. Surface flow. 5. Water requirements. 6. Shortage.

This shortage is in fact substantially higher, for the surface flow cannot be controlled and utilized 100 percent. On the basis of the Unified Water Resource Plan, we could determine the approximate level of utilization of water resources which is 55 percent for an average year, and 75 percent for a droughty year. Under such circumstances, the factual shortage in terms of the surface flow will amount to about 9 billion cubic meters in a droughty year and far more in very droughty years.

These data indicate the seriousness of the situation in terms of satisfying our country's water requirements in the next 25 - 30 years and the major problems that will arise in this respect toward the end of and following that period. The central part of southern Bulgaria, i.e., the territory located within the river basins of the Maritsa and Tundzha rivers, will find itself in a particularly adverse situation. In this area, the high needs for water and water consumption lead to water shortages in excess of 1 billion cubic meters in an averagely moist year and over 2 billion cubic meters in a 75 percent droughty year. In a 95 percent very droughty year this shortage is even higher, exceeding 3.1 billion cubic meters.

In order to coordinate the water resource balance of the country, the shortage in the surface flow shall be compensated through the following measures:

1. The creation of general and local recirculation cycles in the utilization of sewage waters, above all from residential and industrial water supplies, through their purification in filtering stations to the level of requirements stemming from the category of the water reception river in which they will be poured, or of the consumers to whom such waters will be supplied directly. Within that 25 - 30 year period our country should build installations with a filtering capacity of sewage waters, to different levels, for 2.1 billion cubic meters per year. Serious attention should be paid to the fact that the leading into the rivers of the filtered waste waters will not entirely preserve their purity and in most cases they would be repolluted from the waters filtered up to certain levels. This arising serious problem must be resolved through specific plans offering solutions for the direct utilization of the filtered waters by the same water consumer or other consumers around him and be channeled into rivers only in extreme cases.

2. One of the reliable measures for the satisfaction of water shortages in northern Bulgaria would be the utilization of more water from the Danube River. The overall volume of such water directly used from the river would total 3.4 billion cubic meters, not including the need to compensate for respective losses, or navigation canals which would be built eventually in northern Bulgaria and which would raise this water consumption by yet another 400 - 500 million cubic meters per year. For such purposes, southern Bulgaria would require yet as much water. For the time being, however, they are in the study stage, as a result of which they are not being considered. The high water consumption planned by the Danube-bordering countries, using the waters of the Danube River, indicates that it cannot be considered an inexhaustible water reservoir and that in the future, common measures must be implemented to regulate and protect its waters.

3. Fuller utilization of subsoil waters, i.e., the further determination of their usable stocks, would contribute to surmounting water consumption shortages. For the time being, it is planned that this water source will provide two billion cubic meters per year with a tendency to raise this amount to 3 - 3.5 billion cubic meters per year. Such waters will be used mainly to satisfy drinking requirements. However, as a result of their pollution by modern agrotechnology, new problems arise related to their protection from pollution.

4. As a result of the poor annual distribution of precipitation and of the surface flow, in all cases, full use must be made of the possibilities to channel the waters into dams in order to upgrade their usability. The currently planned amount of long-term water control in water resource balances totaling 2,032,000,000 cubic meters should be raised mainly by building long-term equalization facilities.

5. The transfer of water from one river basin to another could also improve the utilization of the country's water resources by yet another 3 billion cubic meters compared with the stipulated 2,490,000,000 cubic meters in current plans.

Regardless of these measures, with a very droughty year, in the individual parts of the country, water shortages will develop in the water resource balance of the country exceeding 1.2 billion cubic meters. The future satisfaction of water consumption requirements in the central part of southern Bulgaria is a particularly difficult problem. The main measure to be taken for compensating for water shortages in this part of the country is to transfer water from the basins of the Mesta and Arda rivers through corresponding pumping facility systems. According to the Unified Water Resource Plan, such water transfer should total 1,178,000,000 cubic meters on an average year, and 976.5 million cubic meters in a droughty year; according to the plan elaborated by the Vodproekt industrial planning enterprise in 1975, entitled "Southern Bulgarian Main Canal," the amount transferred would be 1 billion 665 million cubic meters in an average year, and 1 billion 383 million cubic meters in a droughty year. According to our preliminary estimates, as a result of water shortages, it will be necessary to transfer all possible amounts from the Arda and Mesta rivers to that part of the country totaling far greater amounts -- 2.1 billion cubic meters in an average year, and 1 billion 770 million cubic meters in a droughty year.

In addition to the transferred waters, we shall use the control waters of the Sestrimo, Batak, Vucha, and other power systems. This will require a secondary general leveling of waters to be transferred east of the South Bulgarian Main Canal into the Chirpan, Aprilovo, Mikhaylovo, Inzovo, Vidintsi, Krumovo, Elenovo, Sokol, Bezmer, Pyasuchnik, Dobri-Dol, Marash, Kosten and Vratitsa dams, totaling 1 billion 123 million cubic

meters. This amount does not include the waters to be evened out along the basins of the Maritsa and Tundzha rivers through a series of dams, some of which have already been completed.

Regardless of all these dams, expensive transportation derivation canals for transfer and redistribution of the waters, the building of the expensive Ilinden-Dospat water power system, and others, the full amount of water needed to meet the needs of southern Bulgaria will not be supplied, leaving a shortage of over 200 million cubic meters in a droughty year and over 1 billion cubic meters in a very droughty year. Particularly adverse in this respect is the Tundzha river basin which will be supplied by vast amounts of the water transferred from the Arda, Mesta, and other rivers. The plan of transferring water from the Arda River to the central part of southern Bulgaria in a volume exceeding 725 million cubic meters is not substantiated in terms of the power industry purpose of the power system which would change adversely and drastically its system and output.

This, in general lines, is the situation concerning the possibility for utilization of the country's water resources and the satisfaction of consumption requirements through the year 2000. Should this cover a longer period of time of yet another 20 - 25 years, i.e., through the year 2020, which is proper to contemplate in long-term planning, we consider such shortages would be far greater and that supplying water to this part of the country would involve a great deal of difficulties and restrictions in the development of industry and agriculture, regardless of the relatively lower increase in water consumption to be looked for through a variety of ways and means. This does not mean that northern Bulgaria would not experience difficulties in the more remote future. Use of the Danube River waters cannot be unlimited, and should be regulated through agreements and accords concluded among the countries along the Danube for the preservation of such waters, quantitatively and qualitatively. All this shows that the future satisfaction of the country's needs for pure and conventionally pure water is a very big and very difficult problem.

The principal measures to be taken for the better study of requirements, rational utilization of water resources, and determination of conditions for satisfying the growing water consumption in the country in the future may be summed up and formulated as follows:

1. Study of the possibilities for the greater utilization of Danube River waters for irrigation, industrial water supplies, and satisfaction of population requirements with terrace waters. The waters of the Danube River could be used not only in the adjacent areas and settlements but also in areas located deeper within the country. Thus, for example,

the shortage of conventionally pure water in the fourth area (the Kamchiya and Provadiyska river basins) could be covered by transporting Danube waters through complex irrigation and industrial water supply systems. In this respect they could be used as a reliable water source for the solution of the problems of insuring water consumption requirements in northern Bulgaria.

2. Study and determination of usable subsoil water stocks and of the interconnection between them and the surface flow. Studies for determining the reasons for the pollution of subsoil waters and of conditions for their protection are of very great importance, for such waters will be used mainly for population consumption and industrial water supply purposes.

3. The timely study of the development of the various types of water consumption and the timely building of water sources to meet such water consumption requirements.

Many settlements lack a sufficient amount of water for such reasons. A typical example of this is the water supply of Sofia which has been studied for the past 20 years and whose problem remains factually unresolved. The condition of other settlements and industrial areas is similar.

4. Timely study of the condition of water currents in terms of their pollution; study of measures for their protection and the filtering of sewage waters and their utilization mainly through direct use of such water by the same or other water consumers. This calls for the formulation of plans for utilization of such waters in designing filtering systems.

5. The building of a modern and efficient countrywide technical control system for the preservation of water currents.

6. The search for possibilities in the course of studies and planning, for the maximal equalization of the flow in annual and long-term dams for the complex utilization of the flow by all water consumers.

A departmental attitude which must be eliminated can be seen in the argument on the building of the Sredna Vucha power system with a big or small Tsunkov Kamuk dam. Even though all considerations and reasons call for building a large dam, the problem has not been given a solution, and delays are continuing, leading to a number of adverse consequences.

7. The different needs and the systems used in the utilization of the water by individual consumers trigger a certain antagonism among them and, respectively, major hindrances to the proper utilization of the

waters, particularly below the last stages of power systems. For purposes of power production, in a few hours of the day, substantial water masses of controlled waters are processed, whereas agriculture (irrigation) calls for a permanent water flow between April and September only. Also different is the water supply system for residential requirements.

Proper utilization of the waters calls for finding means for the daily and seasonal secondary equalization of the waters below the power systems through separate equalization facilities or general plants including various dams.

8. Lowering water consumption.

Thus far, water is used in our country on the basis and concept of many water consumers that water is a natural resource and can be used and consumed for a variety of purposes in unlimited amounts. This concept is erroneous. The building of water reservoirs requires substantial capital investments. Operational expenditures are high as well. For this reason, controlled and built-up water facilities are the equivalent of an industrial product whose negative quality is that it cannot be produced in growing amounts. One of the principal measures for the satisfaction of requirements is to reduce water consumption to the level of factual requirements, as well as to eliminate the reasons for water wastes. This could be achieved as follows:

a. The development of a more advanced system in planning and reporting water consumption for irrigation. The present method which requires the implementation of an irrigation plan in agriculture in fact creates conditions for the inefficient utilization of the waters;

b. The elaboration of norms, rates and economic mechanism leading to the economic utilization of the water for drinking requirements and of conventionally pure water in industry and irrigation;

c. Lowering of operational losses stemming from faulty equipment, unlined canals, leaks in water supply systems and sanitation facilities, and others;

d. Reduction of water losses in irrigation as a result of nonutilization during the day, the night, during preholidays and during holidays;

e. Use of new equipment and technology in industry and irrigation reducing water consumption;

f. Seeking possibilities for recycling and dry technologies in industrial output;

g. Study and building of PAVETS for the production of peak load power, thus lowering the consumption of dam waters, and others.

9. Prompt building of filtering stations and systems for the utilization of purified sewage waters, to be completed along with the main construction of the respective enterprise or water supply system.

Direct use of filtered sewage waters by nearby water consumers without their dumping in the rivers.

10. Accelerating the formulation of a method and the final classification of water currents for the entire country, avoiding routine in this respect.

11. Building of dividing pipelines for industrial water supply with conventional pure waters, so that no drinking water may be used for industrial requirements, on the basis of city building plans.

12. Substantiating and proving new irrigation possibilities and possibilities for water consumption in the required times of year for purposes of insuring stable crop harvests.

13. Elaboration and formulation of timely technical and economic studies for the utilization of waters of the Mesta and Arda rivers with a view to the satisfaction of the future water needs of southern Bulgaria.

The water needs of southern Bulgaria and the means for their satisfaction must be completely studied and resolved.

14. Study of the sizes of mountain pastures and of systems for the irrigation of technically and economically suitable areas with a view to meeting animal husbandry requirements and the creation of a fodder base.

15. Overall development of hydroengineering systems to insure capital investment effectiveness. Lagging in the development of irrigation areas in particular leads to financial confusion and poor economic results.

16. Development of a method for long-term planning of water needs for the country's economy as well as population water supplies. The timespan for which we must determine the conditions of growing water consumption and its amounts should be extended to 40 - 50 years.

17. Search for a suitable method and unification of services engaged in long-term studies in order to avoid a departmental attitude and create greater coordination in the study of plans for water resource utilization.

18. Unification of services for the technical and economic exploitation of complex dams -- the most substantive basis of the country's water resources.

The erroneous step of splitting the Dams and Power Systems Directorate should be corrected.

19. Periodical redrafting and improvement of the Unified Water Resource Plan of the Bulgarian People's Republic, as the basic source of information and guideline for the condition of water resources and the satisfaction of water needs in the country. Its reformulation every 10 years should be considered as most expedient. Such plan redrafting should take from 3 to 3.5 years and cost approximately 450,000 leva. This would provide a reliable source of information to all authorities engaged in the planned utilization of water resources and planning the development of the country.

The purpose of this article was to provide a survey of the condition of water resources in our country as well as of the main problems related to the satisfaction of water consumption requirements in agriculture, industry, population supplies, hydroelectric power, and so on. It has been established that it will become ever more difficult to satisfy water consumption needs because of the limited water resources of the country and that a great deal of various problems related to the development and utilization of such resources will arise in the future. Unfortunately, activities related to water and all capital assets in the field of water resources are decentralized among many departments and organizations. This creates many difficulties and inexpediencies in the planning and utilization of water resources.

Regardless of all difficulties, however, it must be considered that these problems will be resolved in the proper directions and according to the directives for the development of the national economy, as well as through the activities to be carried out in the Seventh Five-Year Plan.

BIBLIOGRAPHY

1. Unified Water Resource Plan.

2. Elaborations of the Water Resource Balance Department of the Ministry of Forests and Protection of the Environment.

3. "Irrigation Systems of the Southern Bulgarian Main Canal" -- elaboration of the Vodproekt Industrial Planning Enterprise in 1975, and others.

5003
CSO: 2202

NEW HOLLOW-CATHODE GAS-DISCHARGE TUBE DESCRIBED

Sofia SPISANIE NA BULGARSKATA AKADEMIYA NA NAUKITE in Bulgarian No 3, 1976 p 76

[Unattributed article: "Hollow-Cathode Gas-Discharge Tube"]

[Text] The hollow-cathode gas-discharge tubes are designed to be used as light sources for the resonance spectral lines of the atoms of the chemical elements in atomic absorption spectrophotometers.

The design and external appearance of the tubes are suitable for possible use in "Unikam" spectrophotometers, which are widespread in the country. They have a cylindrical bulb and a flat quartz outlet window. The basic data on such a tube, developed at the Solid-State Physics Institute, are as follows:

Technical Data

Cathode material -- copper or iron
Spectral line width (CuI 3248 Å, FeI 2483 Å) -- 0.1 cm^{-1}
Operating current -- 4-12 ma
Power source voltage -- 600 V
Voltage drop in tube -- not more than 260 V
Gas Filling -- neon
Dimensions:

Outside diameter of bulb -- 45 mm
Length together with socket -- 170 mm

6474
CSO: 2202

NEW KS-TYPE BIOLOGICAL DEWAR FLASKS DESCRIBED

Sofia SPISANIE NA BULGARSKATA AKADEMIYA NA NAUKITE in Bulgarian No 3, 1976 pp 76-77

[Text] The Solid-State Physics Institute has developed a range of Dewar flasks designed for the storage and transport of biological materials at the temperature of liquid nitrogen (77° K). The flasks are made entirely of stainless steel. This makes them very resistant to mechanical action, light and compact, attractive in appearance.

The high-vacuum multilayer insulation of the flasks assures a low coefficient of evaporation of liquid nitrogen.

The KS-type biological Dewar flasks can be used successfully in pedigreed stockbreeding under all the present-day requirements of livestock raising. In addition, they can be used in medicine for the storage and transport of biological specimens at low temperatures.

The biological Dewar flasks come in five models according to the liquid nitrogen capacity.

Each flask has special canisters for easy and convenient handling of the biological material.

Technical Data

	KS6	KS10	KS20	KS40	KS100
Capacity, liters	6	10	20	40	100
Neck diameters, mm	70	75	85	85	120
Canister diameters, mm	55	60	70	70	100
Number of canisters	4	6	6	8	6
Weight per canister, kg	0.100	0.150	0.200	0.300	0.400
Overall height of flask, mm	400	435	520	630	1185
External diameter of flask, mm	270	300	365	440	440

Technical data (continued)

	KS6	KS10	KS20	KS40	KS100
Coefficient of evaporation (liter per 24 hrs)%	13.2	6.0	3.4	2.1	1.7
Weight of flask, kg					
--without canisters	5.5	8.5	14	25.5	60.0
--with canisters	5.9	9.4	15.2	27.9	62.4

6474
CSO: 2202

EIT-1 ELECTRONIC TEMPERATURE-PROFILE MEASURER DESCRIBED

Sofia SPISANIE NA BULGARSKATA AKADEMIYA NA NAUKITE in Bulgarian No 3, 1976 pp 77-78

[Text] A team consisting of Professor Dimitur Mishev, Science Associate Engineer Ventsislav Markov (both from the Central Space Research Laboratory, Bulgarian Academy of Sciences) and Gospodin Momchev, physicist of the Astronomical Observatory in the city of Yambol, made measurements in the region of the Hydrometeorological Station near the city of Yambol during the solar eclipse of 29 April 1976. The measurements were made with an EIT-1 electronic temperature-profile measurer. The instrument was designed, developed and fabricated at the Central Space Research Laboratory and consists of the following basic blocks: a mast along which the sensitive element moves and which is 4 meters long, 1 meter of which is for underground measurements; a mechanical device is attached to the mast to move the sensor -- a four-arm unbalanced bridge whose thermistors are extensible in runners; the third block is a measuring amplifier, which is constructed on the basis of operational amplifiers. It combines all their advantages -- a high degree of integration, great temperature stability (an extraordinarily important parameter in temperature measurements), great resolution and precision. The circuit permits taking as reference any point in the measured temperature range (from -40° C to +60° C). The instrument itself has a built-in graduated needle indicator, but both outlets for numerical display and an automatic recorder are provided. The power supply comes from storage batteries or from grid voltage (220 V). The successful circuit solution makes possible an increase in measuring accuracy to 0.2° C. The interval between two measurements in a noncorrosive environment is 1 sec.

By turning on the regulator (also developed by the team) the temperature in the -40° ÷ +60° C range can be regulated through the electronic

temperature measurer, its inertance depending on the environment in which the measurement is made and ranging from 0.5 to 2 sec. The described high qualities of the instrument enable it to be used to improve devices for the measurement and automatic regulation of temperature in industry and agriculture.

6474
CSO: 2202

NEW MOESSBAUER SPECTROMETER DESCRIBED

Sofia SPISANIE NA BULGARSKATA AKADEMIYA NA NAUKITE in Bulgarian No 3, 1976 pp 78-79

[Text] The spectrometer was developed at the Nuclear Research and Nuclear Energy Institute as a compact instrument to meet the needs of Moessbauer laboratories for scientific and applied research, as well as for routine analysis under industrial conditions. It is intended principally for Moessbauer spectroscopy of iron-containing specimens.

It consists of a Doppler modulator and a gamma-spectrometric channel. The Moessbauer spectrometer is thus a multipurpose instrument, completely adequate for independent work in the sphere of the Moessbauer effect.

The Doppler modulator functions as a speed-regulating servosystem that switches on an electromechanical vibrator and oscillator in order to determine the law of motion. Speed can vary according to two laws: rectangular and serriform.

The gamma-spectrometric channel consists of a gas-filled proportional counter, amplifier, differential discriminator, count-rate gage and scaler with a timer. A high-voltage stabilized rectifier is built into the spectrometer to power the proportional counter.

The Moessbauer spectrometer can be used in the following operating modes:

1. Constant speed, set manually by a multiturn potentiometer. The timer and scaler are used for recording the Moessbauer spectrum.

2. Constant speed, which in the space of 20 minutes varies automatically from -1.25 to +1.25 cm/sec. The Moessbauer spectrum is recorded in analogous form by an externally actuated self-recorder.

3. Fixed constant speeds which can be selected with a pushbutton switch. This operating mode is provided for routine analyses in industry. Absorption at six characteristic points of the spectrum is read according to the scaler.

4. During operations at serriformly varying speed, a multichannel analyzer is used to record the Moessbauer spectrum. The number of channels used can be switched over to 100, 200, 400 and 800 or 128, 256, 512 and 1024.

In the four operating modes, speed can vary from 0 to +1.25 cm/sec. Error in the repetition of a given motion is less than 0.1 percent for constant speeds, and 0.05 percent for variable speeds. Stability of the high-speed scale is better than 0.1 percent for 60 days, which permits working with the spectrometer without frequent calibration.

6474
CSO: 2202

NEW BETA REFLECTOMETER DESCRIBED

Sofia SPISANIE NA BULGARSKATA AKADEMIYA NA NAUKITE in Bulgarian No 3, 1976 pp 79-80

[Text] This radioisotope device was developed by the state at the Nuclear Research and Nuclear Energy Institute of the Bulgarian Academy of Sciences. The device is used for rapid (1-10 min) determination of the content of heavy and medium-heavy elements (U, W, Pb, Ba, Sn, Cu, Zn, Fe etc.) in compounds, alloys, ores, minerals, concentrates etc. thereof, as well as for determination of the ash content of coal. Specimens may be liquid (in the form of solutions), emulsions, powders, pressed tablets or solid. The thickness of protective coatings (varnish or metal) can also be determined. The principle of the device is the interaction of beta particles with a substance. The resultant back-scattered (reflected) beta particles convey information about the chemical composition of the substance (the density and flux of the reflected beta particles depend on the average atomic number $\bar{Z}$ of the substance from which they are reflected). Therefore, this method can be used to analyze substances comparatively simple in composition (two-component systems), in which the atomic number Z_1 of the unknown element differs significantly (by at least three unit digits) from the average atomic number $\bar{Z}_m$ of the mixtures, it being given that $\bar{Z}_m$ must be constant. The device consists of four principal blocks: detection and measuring unit, radiometer, timer and electric power supply, which are assembled in one common case.

The detection and measuring unit consists of a radioactive source of beta particles placed in an appropriate collimator, a Geiger counter and preamplifier. Space is provided in the block to put the vessels with the specimen to be measured.

The radiometer is a decade scaler containing six decades, i.e., a storage capacity of 10^6 pulses, with the possibility provided of switching over to $1 \cdot 10^5$, $2 \cdot 10^5$ and $4 \cdot 10^5$ pulses.

The timer is quartz-stabilized at 1 MHz with digital indication of measured time by means of light-emitting diodes. The maximum time that can be measured is 999.9 seconds with an 0.1-second step.

The radiometer and timer are constructed using integrated circuits entirely. These are actuated simultaneously by a common pushbutton, and stopping of the timer is effected automatically when the entire space of the radiometer scaler is filled up, i.e., time is measured while a specified number of pulses coming from the detector are accumulated. Thus, approximately the same mean-square statistical error occurs in measuring different specimens.

The electric power supply is general-purpose, i.e., it can come from the electric network or a storage battery. The electric power supply block provides the stabilized voltages necessary to power the detector, radiometer and timer.

Specifications:

Necessary amount of measured specimen	min 2 g
Effective diameter of vessels into which specimen is poured	23 mm
Time per measurement	1-10 min
Absolute error of measurement	$\pm$(0.1-1.0)%
Beta radioactive source ^{90}Sr-^{90}Y	$\sim$120 μCi
Geiger counter	SBT-10 type
Power consumption	
--from network	220 V, $\sim$10 VA
--from storage battery	12 V, $\sim$0.8 A
Dimensions of device	194x123x140 mm^3
Weight	2.8 kg

The first prototypes of the instrument have been adopted at BARIT in the city of Stara Zagora, where they are used to analyze barytes and baryte concentrate, at GORUBSO [Bulgarian-Soviet Mining Company] in the city of Madan, where they are used to analyze lead concentrate, and at NIPRORUDA [Scientific Research, Planning and Design Institute for Ore Mining and Processing] in Sofia, likewise to analyze lead concentrate. The latest model was developed under contract with the International Atomic Agency in Vienna specially for the analysis of nuclear materials and is used by the control inspectorate to assure nuclear material safeguards. According to the agency's data, the instrument makes possible more than a hundredfold reduction in the number of specimens provided for chemical analysis.

The instrument is being produced for the Development and Exploitation Base of the Unified Center for Science and Personnel Training Center for Physics and Physicotechnical Problems.

6474
CSO: 2202

MINISTER FINDS AWARDING OF SCIENTIFIC DEGREES LAX

Budapest MAGYAR TUDOMANY in Hungarian No 9, 1976 pp 524-528

[Article by Gyorgy Aczel, member of the Political Committee of the MSZMP, deputy chairman of the Council of Ministers: "Some Current Aspects of Scientific Life"]

[Excerpt] It is true in science too that monopoly is the hotbed of dogmatism. In the course of the building of our socialist society we are more and more distant from the era where dogmatism has pushed back the social sciences — as it did genetics, cybernetics, and some other areas of research — with the result that the proponents of some specific research directions claimed the right of exclusiveness. This jeopardized the Marxist-Leninist scientific approach and made the fuller understanding of reality more and more difficult.

Criticism and Openness

Criticism is among the most important tools of science policy. Not only is criticism needed directly in the social sciences because of their scientific and ideological character; it is also needed in all branches of science where it contributes to the elucidation of the true reality.

Therefore, the status of our public scientific life depends significantly on whether scientifically appropriate, objective, and Marxist criticism had been exercised or not in the evaluation of the solution of real research problems.

Scientific life in Hungary deals with major problems of the economy, the culture, and the society as a whole; it plays an important role in the shaping of socialist thinking by the public and in the development of the national economy. But those who shape consciousness must shape and develop

the socialist character of public thinking in their own subjects more effectively also. If, in addition to the basically positive phenomena of scientific criticism, we desire to answer the question whether Marxist criticism is found everywhere and whether the scientific debates take place in the proper fashion, we cannot reply that everything is just fine everywhere. For example, we cannot be satisfied with the seriousness, ideological correctness, and objectiveness of the criticism that is evident in some fields of social sciences. While discussing this, we must raise an objection against both extremes. On the one hand, we frequently encounter examples of uncriticality and the non-scientific gesture of mutual overlooking of deficiencies — the practice of the "lukewarm coexistence" to which I referred earlier — and, on the other hand, we sometimes find frantic accusations and unjustified attacks instead of scientific criticism. Both uncriticality and smearing instead of criticizing threaten the essence of scientific life, its moral credibility, and its healthy development.

The critical public life of sciences depends on the character of the internal laws governing the individual branches of science, for example on whether the phenomenon studied can be experimentally reproduced or modeled. In studies involving exact experiments, the performance and the results must be evaluated on the basis of different approaches than in instances where the truth is ferreted out primarily by logical or phenomenological means. But there is no branch of science which can exist without criticism. Whether a scientific experiment has been successful or ended in failure can usually be determined on the basis of exact methods; however, whether the experiment was necessary at all is a matter of science policy. In order to clarify this, it does not suffice to examine the course of the experimental procedure; we also need overall scientific criticism.

The ethical and critical conditions of scientific life cannot be regarded as narrow, internal matters, and cannot be examined separately from public aspects. It has always been a basic prerequisite of the manifestation of the ethical standards that the public has an opportunity to evaluate the actions and attitudes on the basis of real facts and criteria. Nowhere has such publicity so natural a social medium as in socialism. In spite of this fact, however, the public aspect of our scientific life is not without flaws everywhere; specifically, not everything reaches the scientific forums which should. Most scientists and researchers conduct themselves according to the moral principles; thus, we may state that most of them would prefer a clear view and the publicity which is necessary for actions and attitudes.

Improvement of scientific qualification procedures is also a matter related to proper criticism; this is an important area of our scientific life. The

course of its development reflects and measures the development of research. Accordingly, if scientific degrees are awarded equally to those who work in a weak, superficial, and hardly scientific manner, and produce what appears to be scientific achievements but which really are not, then we offend those who performed serious work. The Academy as an institution, as well as the Committee of Scientific Qualification as an organization, must fight this more systematically than before, so as to stop granting degrees for other than true values.

Our task is to raise the level of the degree-granting process. The seriousness of the acquisition of a degree must be ensured already at the time when the research work begins, since once we are in the stage of defending the results it seems to be very difficult or late to reject unscientific results. In approving the proposed theme and outline, we must weigh carefully whether the subject matter deserves research at all and whether the proposer is capable of solving the problem involved. Then — before proceeding with the preparation of the dissertation — it becomes the responsibility of the institution involved to debate the study as it goes on and to prevent continuation of the work if it appears that no scientific achievement worth of qualification will be forthcoming.

It is unlikely that valuable scientific work will result from a project of which the sole aim is to obtain a scientific degree and the status associated with it. It is also impermissible to evaluate the importance and currency of the themes on the basis that the applicant — possessing certain stylistic skills — managed to give a title to the dissertation which is classifiable in the scope of an existing major research project. In many instances, the chosen themes "relate" to a national or an academic major research project in a quite arbitrary and forced manner only. If someone desires to study some specific aspect of literary sciences, he need not to do this in connection with the scientific-technical revolution only because this would make the theme appear more modern and "saleable." But even if the qualification takes place without direct and honest conflict between scientific opinions, meaning that there is no constructive, sharp, and objective debate, evaluation, recognition, or rebuttal — the essence of constructive exchange of views — devaluation still may take place.

Today it often suffices for being qualified — for the rest of one's life — to have written a dissertation, passed the prescribed examinations. This means that nobody expects systematic scientific work. By having written a single dissertation, one acquires a lifetime title and all material and other perquisites associated with it. A school-like examination system has developed which is to be surmounted by everyone who desires to continue to

work as a scientist since these examinations became conditions of advancement in a formalistic manner. In some cases there are cliques and monopolies for awarding scientific degrees; in these cases, the condition for obtaining a scientific degree is not a true scientific achievement but service to the cause of the clique and favors rendered to certain individuals.

While modern scientific studies almost always are carried out by teams of various sizes,where the representatives of more than one discipline are usually represented, our scientific qualification procedure and practice is dominated by the narrow specialist system and attitude. As a result, we have so far not found a way for honoring collective work.

It is largely the performance of the Academy which must ensure that the new forms do not loosen up the qualification process. But we must not avoid making those changes which are necessary. More incentive is needed if we look at the present ratio of qualifications granted on the basis of collective research and theses.

It is also the task of the Academy to develop the procedures for evaluating collective research; it is the obligation of all of us to support the emergence of such collective projects.

But the qualification procedure has a chain reaction-like, seemingly unstoppable quality, which must be stopped at all costs! Once someone has obtained a scientific degree for a mediocre project, then on what moral basis will he oppose another project which is just as mediocre or perhaps only slightly better? Thus, one mediocre project may become the cause for the approval of additional mediocre projects.

If unworthy individuals succeed in obtaining a scientific degree, this offends the entire scientific community. If those who look at scientific life not as researchers regard science as worthy of esteem, it is the obligation of a scientific body to look into this matter thoroughly, and if needed discuss the anomalies in its organizational meetings.

One reason why we have these negative phenomena in the field of scientific qualification is the decision — which was correct at the time when it was rendered — that certain jobs can only be filled with individuals having a certain scientific degree. But if our past decisions are no longer valid, then we should have the courage of rectifying them. Someone may be a fine educator, teacher, or inspirer who can start scientists in their careers, without having a scientific degree of his own. Someone may be a fine healer and physician without advanced scientific degree; the most important thing

is that he have adequate knowledge for his job. This situation must be stopped and we ask the Academy to use its organizational and supervisory force to do whatever is needed to maintain a high level of scientific qualification and to raise the standards from the present level.

True scientists do not write for the Committee of Scientific Qualification or for each other. Therefore we must discuss the language and intelligibility of our publications. I am an avid reader of the scientific journals, at least those which I am able to comprehend. Now that I have heard from a number of linguists, I no longer regard the matter I wish to discuss a linguistic problem but a much more deep scientific approach matter. Babits had a beautiful thought, which Radnoti made his credo: a poorly worded sentence is "like a broken window through which we look at a poor thought."

True science cannot acquiesce by the fact that there are some who excise perfectly good Hungarian terms from the language of science without any criticism, or those who replace scientific attitude by pseudo-scientific attitude and present pseudo-science. I hope that my remarks will not be misunderstood since I am fully aware of the fact that every scientific discipline has many terms and words which are incomprehensible for the outsider. Of course, a scientific specialty must use its own terminology. It is also obvious that there are big differences not only among the various sciences but also within a single science itself. Nobody expects the scientist to describe an esoteric mathematical or physical theory in a way so that everybody understands it. However, it is a justified hope that it should be understood by the maximum number of people. There are many examples for the presentation of deep scientific matters and principles in ways which even relatively uneducated individuals can comprehend. Intelligibility is especially important in the social sciences where information about the achievements, their "practical applicability," is usually through communication media, and where it it very important that it answers the questions raised by tens or thousands of thousands of people so as to penetrate public thinking.

In spite of all this, our scientific journals often use very boring test and trade jargon to an unduly great degree. As a result, some journals have papers which are practically incomprehensible although the title suggests that they deal with important matters. In other instances, especially in the field of the rapidly growing field of social sciences, it is the manner of approach and the fetishization of the methogology which creates horrible examples. There are essays in the field of literary history which analyze generally comprehensible works but are mysteries to the reader. Instead of making the road easier to these works, we create road blocks.

We must become more fussy in our scientific book publishing efforts and in our general publication procedures. One condition which we should meet is that it must be generally realized that not everything which anybody has ever written must be published. Sometimes it would be preferable to deposit the papers (a few copies) on subjects of interest only to a narrow group of readers in the library of the Academy, where those interested may peruse it. This is better than to print several hundred copies at great expense only for reasons of prestige or other non-scientific factors.

2542
CSO: 2502

BIOGRAPHIC SKETCHES OF NEW CORRESPONDING ACADEMICIANS PUBLISHED

Budapest MAGYAR TUDOMANY in Hungarian No 9, 1976 pp 578-587

[Excerpts] Gyula Grasselly was born in 1920 in Szeged. He obtained a secondary-school teacher certificate at the university of sciences of his native city in 1944 in the subjects of natural sciences and chemistry. He defended his doctoral dissertation — entitled "Role of Complex Anion Potentials in Geochemistry" — in 1959. At the present time he is professor and department head at the Department of Mineralogy, Geochemistry, and Petrography of Jozsef Attila University of Sciences. In the field of geochemical research he was primarily interested in the geochemistry of manganese and organic geochemistry. The following are his major publications: "The Role and Significance of the Complex Anionic Potentials in the Geochemistry. Parts I to IV" ACTA MINER. PETR. SZEGED, Vol 12, 1959; "Data on the Geology and Mineralogy of the Manganese Ore Deposit of Urkut. Parts I and II (with Cseh and Nemeth) ACTA MINER. PETR. SZEGED, Vol 14, 1961, and Vol 17, 1966; "Role of the Manganese Minerals in the Migration of Elements" (with Hetenyi) SOC. MINING GEOL. JAPAN, special issue 3, 1971; "Contributions to the Alkaline Permanganate Oxidation of the Kerogen, Lignite, and Peat" (with Hetenyi and Agocs) ACTA MINER. PETR. SZEGED Vol 21, 1973 ; and "Contributions to the Interpretation of Soluble Organic Materials of Sedimentary Rocks" (with Hetenyi) ACTA MINER. PETR. SZEGED Vol 21, 1974.

Vilmos Paschka was born in 1929 in Budapest. He completed his higher education in 1952, at the Faculty of Political and Legal Sciences of the ELTE [Eotvos Lorand University of Sciences]. He became a doctor of political and legal sciences in 1968, when he defended his dissertation entitled "Source of Rights and Creation of Laws." At the present time he is scientific department head at the Institute of Political and Legal Sciences of the MTA [Hungarian Academy of Sciences] and carries out research in the field of law theory. His most important publications so far are: "Fundamental Aspects of

the Legal Relationship Theory" [in Hungarian], published by the Economic and Law Press, 1960; "Source of Law and Creation of Laws" [in Hungarian], published by the Academic Press, 1965; "Fundamental Problems of Modern Law Philosophy" [in Hungarian], published by Gondolat, 1972; "The Legal Sociology of Max Weber" [in Hungarian], published by the Academic Press, 1975.

Gabor Petri was born in Budapest in 1914. He obtained his medical diploma in 1937 at the University of Pecs. In 1972 he was awarded the degree of doctor of medical sciences on the basis of his dissertation entitled "The Pathology and Sympatholytic Therapy of Paralytic Ileus." He is professor and department head at the First Surgical Clinic and Institute of Experimental Surgery of the University of Medical Sciences in Pecs; he is also dean of this university. His most important publications so far in the field of clinical and experimental surgery are: "Principles of Stomach and Intestinal Ulcer Formation and Principles of Surgical Therapy" Studies and Papers From the Surgical Clinic of the University of Medical Sciences in Szeged [in Hungarian], 1947; "New Contributions to the Pathology of the Pyogenic Inflammations and the Effect of Synthetic Antihistamins on Their Course. Part II: The Effect of Antihistamine of Leucocytes on the Course of the Pyogenic Inflammation" [in German, with Csipak, Kovacs, and Bentzik] ARCH. INT. PHARMACODYN. Vol 91, 1952; "Metabolic Ramifications of Presurgical Preparation and Postsurgical Treatment" [in Hungarian, with Kovacs], published by Medicina, 1964; "Sympatholytic Treatment of 'Paralytic' Ileus" [with Szenohradszky, Porszasz, and Gibiszer], SURGERY, Vol 70, 1971.

Sandor Rajki was born in 1921 in Pusztafoldvar. He completed his studies at the Agricultural College of Mosonmagyarovar and eventually, in 1948, graduated at the University of Agricultural Sciences. He obtained the degree of doctor of biological sciences in 1966, on the basis of his dissertation entitled "Autumnalization and Its Genetic Interpretation." At the present time, he is director of the Research Institute for Agriculture of the MTA in Martonvasar. His research field is genetics, phylotronics, and wheat improvement. His most important publications so far are: "On the Situation in Genetics" MTA MEZOGAZDASAGI KUTATO INTEZETE, MARTONVASAR, Vol 48, 1966; "Autumnization and Its Genetic Interpretation" published by the Academic Press, 1967; "Metabolism and Heredity or Autumnization as a Microevolution" AGRICULTURAL RESEARCH INSTITUTE OF THE HUNGARIAN ACADEMY OF SCIENCES, MARTONVASAR, Vol 112, 1972 (with coauthors); "Research Strategy of the Martonvasar Phytotron" PHYTOTRONIC NEWSLETTER, No 4,5,6, pp 42-46, 1973; "The State-Approved MV1(1971), Mv2(1972, MV3(1973), Mv4(1974), and Mv5(1975)" (coauthor 30-35 percent).

2542
CSO: 2502

BIOGRAPHIES OF NEW CORRESPONDING ACADEMICIANS PUBLISHED

Budapest MAGYAR TUDOMANY in Hungarian No 7-8, 1976 pp 448-455

[Excerpts] Samu Imre was born in 1917 in Felsoor. He completed his university studies in 1942, in Debrecen, at the Count Istvan Tisza University of Sciences. He became a doctor of linguistic sciences in 1969. The title of his dissertation was "The System of Current Hungarian Dialects." At the present time he is the deputy director of the Institute of Linguistic Sciences of the Hungarian Academy of Sciences. He carries out research in the field of Hungarian dialects and Hungarian linguistic history. Earlier he also studied descriptive linguistics. The following are his major works: The Battle of Szabacs (1968); Atlas of Hungarian Dialects (editors: Laszlo Deme and Samu Imre), Vol 1 (1968), Vol 2 (1970), Vol 3 (1973), Vol 4 (1974), Vols 5 and 6 (in press); The Dialect of Felsoor (1971); The System of Current Hungarian Dialects (1971); Dialect Dictionary of Felsoor (1973).

Dezso Kiss was born in Debrecen, in 1929. He completed his university studies in his city of birth, Debrecen, at the Faculty of Natural Sciences of Kossuth Lajos University of Sciences. In 1966 he defended his doctoral dissertation, entitled "Experimental Study of n-Gamma Reactions." At the present time he is deputy director of the Joint Institute for Nuclear Research in Dubna. His field of science is experimental particle and nuclear physics. The following are his major publications: "Gamma-gamma Angular Correlation in the $\tau i^{48}(n,\gamma)\tau i^{49}$ Reaction (NUCL. PHYS. Vol 24, 1961, p 151);"Explorations of the Interference of the Resonance Capture of the Neutrons With Potential Capture in a 4.9eV Resonance for the Nuclei of Gold," [In Russian](ZHETF Vol 46, 1964, p 1578); Neutron Physics,published by the Academic Press [in Hungarian] (1971); "Transmission Regeneration of Neutral K-Mesons of Hydrogen in the Momentum Region of 14-42 GeV/C (PHYS. LETT., Vol 38B, 1972, p 452); "Regeneration of Neutral K-mesons on Carbon in the Momentum Region of 16-40 GeV/C." [In Russian] (NUCL. PHYS. Vol 67, 1973, p 291); and "A Study of the Inclusive Reactions Involving γ-Quanta in $\pi^- p, \pi^- C^{12}$ Interactions at p - 40 GeV/c" (NUCL. PHYS., Vol B83, 1974, p 365) (all with co-authors).

Ferenc Papp was born in Budapest in 1930. He graduated at Eotvos Lorand University of Sciences in 1951 (Lenin Institute). In 1972, he became a doctor of Linguistic sciences; the title of his dissertation was "The Paradigmatic System of the Hungarian Noun (Description and Automatic Synthesis)." He works at Kossuth Lajos University of Sciences in Debrecen, where he is professor and department head at the Department of the Russian and Slavic Languages. His research fields include Russian and Hungarian linguistics, general and computerized linguistics, and semiotics. His major works published so far are the following: "Mathematical Linguistics in the Soviet Union" (1964); "Course of Modern Russian Language" (in Russian, with Kalman Bolla and Erna Pall; 1968; 3rd edition: 1975); "Dictionary of the Hungarian Word Endings" (in Hungarian, 1969); "Phonem Structure of the Poetic Works of Endre Ady" (in Hungarian; 1974).

Gyorgy Vajda was born in 1927 in Budapest. He graduated in 1949 at Budapest Technical University. He defended his doctoral dissertation in 1964; its title was "Deterioration of Electrical Insulators and A study of the Deterioration." He is the director of the Research Institute for the Electric Power Industry, and carries out research in the field of high-voltage technology, insulation technology, electric energy systems, and energetics. His major works published so far are the following: "Effect of Electrode Material on Breakthrough Voltage" (1956; in Hungarian); "Research in Damage of Isolation," Energiya Publishing House, Moscow, [in Russian, 1968); "Electrical Force Fields of Insulators" (in Hungarian, 1970); "Energy and Society" (in Hungarian, 1975).

2542
CSO: 2502

ROSTER OF DOCTORS AND CANDIDATES OF SCIENCES

Budapest MAGYAR TUDOMANY in Hungarian No 7-8, 1976 pp 482-484

[News from the Committee of Scientific Qualification. New Doctors and Candidates of Sciences. April-May 1976]

[Text] I.

The Committee of Scientific Qualification declared

Csaba Asszonyi, doctor of technical sciences, on the basis of his disserration entitled "On the Rheological Theory of Rock Continuums"; the opponents were: Ferenc Martos, academician; Istvan Huszar, doctor of technical sciences; and Gyula Alpar, doctor of technical sciences;

Karoly Czegledy, doctor of linguistic sciences, on the basis of his studies, published in theses, dealing with Arabic philology, Syrian philology, caucasiology, and the ancient history of the Hungarian people; the opponents were: Lajos Ligeti, academician, Antal Bartha, doctor of historical sciences; and Andras Rona-Tas, doctor of linguistic sciences;

Mihaly Forgon, doctor of medical sciences, on the basis of his dissertation entitled "Some Pathophysiological and Biomechanical Problems of Femur Neck Fracture and Its Clinical Consequences"; the opponents were: Janos Zoltan, doctor of medical sciences, Jeno Manninger, candidate of medical sciences; and Tibor Risko, doctor of medical sciences;

Marianna Takacs (Mrs Haraszti), doctor of art-historical sciences, on the basis of her dissertation entitled "Spanish Nature Painting in the 17th Century"; the opponents were: Gabor Tolnai, academician, Lajos Vayer, doctor of art-historical sciences, and Edit Balash, candidate of art-historical sciences;

Gyorgy Lazar, doctor of medical sciences, on the basis of his dissertation entitled "Data on the Pathophysiology of the Reticuloendothelial System"; the opponents were: Imre Toro, academician; Kazmer Jobst, doctor of medical sciences; and Gyozo Petranyi, candidate of medical sciences;

Laszlo Orosz, doctor of economic sciences, on the basis of his dissertation entitled "Fixed-Asset Efficiency and Technological Equipment in Some Dynamically Growing Industry Branches"; the opponents were: Antal Stark, doctor of economic sciences; Istvan Nemenyi, doctor of economic sciences; and Gyula Metzger, candidate of economic sciences;

Jozsef Szabados, doctor of mathematical sciences, on the basis of his dissertation entitled "On Convergence and Saturation Problems of Approximation Methods"; the opponents were: Laszlo Leindler, academician; Karoly Tandori, academician; and Dezso Kralik, candidate of mathematical sciences;

Jozsef Szejtli, doctor of chemical sciences, on the basis of his dissertation entitled "Acid Hydrolysis of Glycoside Bonds"; the opponents were: Janos Kuszmann, doctor of chemical sciences, Imre Ruff, doctor of chemical sciences; and Marton Kajtar, candidate of chemical sciences;

Tamas Szekely, doctor of chemical sciences, on the basis of his dissertation entitled "Investigation of the Thermal Stability of Inorganic Polymers"; the opponents were: Ferenc Tudos, academician; Peter Huhn, doctor of chemical sciences, and Pal Szarvas, doctor of chemical sciences; and

Janos Zambo, doctor of technical sciences, on the basis of his dissertation entitled "Processing Problems of Bauxites Contaminated With Calcite and Dolomite"; the opponents were: Zoltan Szabo, academician; Zoltan Horvath, doctor of technical sciences; and Bela Toth, candidate of chemical sciences.

II.

The Committee of Scientific Qualification declared

Arpad Arvay, candidate of political and legal sciences, on the basis of his dissertation entitled "Expansion of the Rights of Local Councils and Increased Party Guidance of Their Activities";

Maria Popovics (Mrs Benko), candidate of technical sciences, on the basis of her dissertation entitled "Physico-Chemical Study of the Steel Refining Method Using Limestone-Alumina Slag";

Endre Bocz, candidate of political and legal sciences, on the basis of his dissertation entitled "The Concept of Personal Danger to Society; Its Components and Evaluation in Criminal Law";

Fayek Hossny Hessen Farrag, candidate of agricultural sciences, on the basis of his dissertation entitled "Comparative Study of Hungarian Spotted × Holstein Fris (F^1) and Hungarian Spotted × Jersey (F^1) Populations";

Geza Feher, candidate of art-historical sciences, on the basis of his dissertation entitled "Turkish Renditions of Hungarian History in the 16th Century";

Bela Fekete, candidate of medical sciences, on the basis of his dissertation entitled "Clinical Significance of the Study of the Rosette-Forming Lymphocytes";

Ilona Fodor, candidate of literary sciences, on the basis of her dissertation entitled "Face-to-Face (the Life of Gyula Illyes Until Paris)";

Tibor Frint, candidate of medical sciences, on the basis of his dissertation entitled "Investigation of the Functional-Analysis Perturbance of the Sound-Forming Mechanism";

Imre Gocsei, candidate of geographic sciences, on the basis of his dissertation entitled "The Nature Geography of Szigetkoz; Terrain-Geographic Studies";

Eva Gonczol, candidate of medical sciences, on the basis of her dissertation entitled "Investigation of the Biological Consequences of Cytomegalovirus Infection";

Janos Gyenis, candidate of chemical sciences, on the basis of his dissertation entitled "Investigation of the Transport Processes of the Separating-Membrane Method Pulsed With Bubbles, and the Use of the Method in the Solvent Deparaffinization";

Jozsef Gyory, candidate of chemical sciences, on the basis of his dissertation entitled "Investigation of the Centrifugation Filtration Method In a Continuous Self-Discharging Centrifuge";

Dinh Hanh, candidate of economic sciences, on the basis of his dissertation entitled "Role of the Plan and of the Decision-Making and Financing Processes in the Realization of Investments";

Atef Mohamed Aly Hassanein, candidate of technical sciences, on the basis of his dissertation entitled "Investigation of the Turbulent Boundary Layer Developing at the Vanes of a Paddlewheel With Centrifugal Flowthrough";

Jozsef Hering, candidate of technical sciences, on the basis of his dissertation entitled "Optimum Dimensions of Planar Cam Mechanisms To Ensure Maximum Lifetime";

Mrs Istvan Hoffmann, candidate of economic sciences, on the basis of her dissertation entitled "The Management Model of Hungarian Households";

Aurel Horvath, candidate of technical sciences, on the basis of his dissertation entitled "Development of the Theory and Technological Applications of Physical Chemistry in Ferrous Metallurgy";

Istvan Irto, candidate of medical sciences, on the basis of his dissertation entitled "Comparative Evaluation of the Thermographic and Mammographic Examination of Breast Diseases";

Gyorgy Karmos, candidate of medical sciences, on the basis of his dissertation entitled "Acoustically Elicited Potential and Motivation";

Jozsef Kenez, candidate of medical sciences, on the basis of his dissertation entitled "Tomographic X-Ray Anatomy of the Pneumoencephalography of Subarachnoidal Cisterns";

Jozsef Kindler, candidate of economic sciences, on the basis of his dissertation entitled "Some Aspects of System-Theoretical Decision Theory, With Emphasis on Management Decisions";

Jozsef Sandor Kovacs, candidate of psychological sciences, on the basis of his dissertation entitled "Controlled Development of Individual Writing";

Le Hung Lam, candidate of medical sciences, on the basis of his dissertation entitled "Putting Amputees Back to Work and Their Rehabilitation";

Karoly Moholi, candidate of geographic sciences, on the basis of his econo-geographic activity published in theses;

Nguyen Van Nam, candidate of economic sciences, on the basis of his dissertation entitled "Statistical Measurement of Industrial Labor Productivity, Its Analysis, and the Examination of the Factors Contributing to Increased Productivity, With Emphasis on Methods Capable of Being Used in Vietnam";

Eva P. Nemeth, candidate of medical sciences, on the basis of her dissertation entitled "Data on Acute Hemorrhagic Pancreatitis and the Development of Early Complications, as Well as on Their Modification";

Pham Van Nghien, candidate of earth sciences (meteorology), on the basis of his dissertation entitled "Investigation of Southeast-Asian Typhoons on the Basis of Satellite Cloud Pictures";

Bela Palancz, candidate of technical sciences, on the basis of his dissertation entitled "Mathematical Modeling of Multicomponent Drying";

Lajos Pataki, candidate of medical sciences, on the basis of his dissertation entitled "Importance of the Examination of Free Anti-D Antibody in the Blood-Exchange Therapy of Immunization-Caused Icterus Gravis";

Nguyen Phung, candidate of economic sciences, on the basis of his dissertation entitled "Some Aspects of Production Cost Calculations, With Special Emphasis on the Practice of Machine-Manufacturing Enterprises";

Maria Prokopp, candidate of art-historical sciences, on the basis of her dissertation entitled "Influence of the Italian Trecento on Central-European Fresco Painting, With Special Emphasis on Hungary";

Odon Rezek, candidate of technical sciences, on the basis of his dissertation entitled "Investigation of the Linear Force Equations of Steel Chip-Forming";

Zoltan Rozsa, candidate of literary sciences, on the basis of his dissertation entitled "Satire and Society in the Italian Middle Ages and Early Renaissance";

Janos Solyom, candidate of medical sciences, on the basis of his dissertation entitled "Investigation of the Factors Affecting the Production of Aldosterone in Rats";

Laszlo Tomcsanyi, candidate of chemical sciences, on the basis of his dissertation entitled "Voltammetric Study of Dithizone and Its Application in Polarographic Analysis";

Jozsef Veress, candidate of literary sciences, on the basis of his dissertation entitled "Attraction and Repulsion"; and

Arpad Volczer, candidate of philosophical sciences, on the basis of his dissertation entitled "The Concept of Object and Subject, and the Term of Objective and Subjective, in Modern Marxist Philosophy."

2542
CSO: 2502

- END -